Integrated Climate Adaptation and Resiliency Program (ICARP)

Agenda Item 7 | Workshop Session: Linking Vulnerability Assessment Frameworks and Climate Tools with Practitioner Needs

Technical Advisory Council

March 22, 2019 | Sacramento, CA

Conceptual Framework: Climate Vulnerability Assessment

Building off the ICARP TAC's Vision Framework

Different Assessments, Consistent Framework

Recognize that all assessments are unique – responding to specific policy questions and local conditions

This conceptual framework…

- Is a simplified presentation of complex process and interconnected systems
- Is based on current state of practice/literature (IPCC)
- Builds on TAC's Vision Framework work from 2017-2018

TAC Vision Statement: Key Components

All people and communities respond to changing average conditions, shocks, and stresses in a manner that minimizes risks to public health, safety, and economic disruption and maximizes equity and protection of the most vulnerable.

Natural systems adjust and maintain functioning ecosystems in the face of change.

Infrastructure and built systems withstand changing conditions and shocks, including changes in climate, while continuing to provide essential services."

TAC definition of vulnerable communities

"Climate vulnerability describes the degree to which **natural, built, and human systems** are at risk of exposure to climate change impacts. Vulnerable communities experience heightened **risk** and increased **sensitivity** to climate change and have less **capacity** and fewer resources to cope with, adapt to, or recover from climate impacts.

These disproportionate effects are caused by physical (built and environmental), social, political, and/or economic factor(s), which are exacerbated by climate impacts. These factors include, but are not limited to, race, class, sexual orientation and identification, national origin, and income inequality.

Vulnerability Assessment Framework

TAC Vision

Climate Impact	Risk	Sensitivity	Adaptive Capacity
Human and social system	**All people and communities** respond to changing average conditions, shocks, and stresses in a manner that minimizes risks to public health, safety, and economic disruption and maximizes equity and protection of the most vulnerable.		
Natural systems	**Natural systems** adjust and maintain functioning ecosystems in the face of change.		
Built systems	**Infrastructure and built systems** withstand changing conditions and shocks, including changes in climate, while continuing to provide essential services.		

Vulnerability Assessment Framework

TAC Definition of Vulnerable Communities

TAC Vision

Climate Impact	Risk	Sensitivity	Adaptive Capacity
Human and social system	Climate vulnerability describes the degree to which **natural, built, and human systems** are at risk of exposure to climate change impacts. Vulnerable communities experience heightened **risk** and increased **sensitivity** to climate change and have less **capacity** and fewer resources to cope with, adapt to, or recover from climate impacts.		
Natural systems			
Built systems			

Vulnerability Assessment Framework: *Risk*

Climate Impact	**Risk**	Sensitivity	Capacity
Human and social systems	✔		
Natural systems	✔		
Built systems	✔		

Risk = the potential for consequences where something of value is at stake and where the outcome is uncertain, recognizing the diversity of values.

Risk is often represented as probability of occurrence of hazardous events or trends multiplied by the impacts if these events or trends occur.

IPCC, 2014: Climate Change 2014: Impacts, Adaptation, and Vulnerability.

Vulnerability Assessment Framework: *Sensitivity*

Climate Impact	Risk	**Sensitivity**	Capacity
Human and social systems		✔	
Natural systems		✔	
Built systems		✔	

Sensitivity = the degree to which a system or species is affected, either adversely or beneficially, by climate variability or change.

The effect may be *direct* (e.g., a change in crop yield in response to a change in the mean, range, or *indirect* (e.g., damages caused by an increase in the frequency of coastal flooding due to sea level rise).

IPCC, 2014: Climate Change 2014: Impacts, Adaptation, and Vulnerability.

Vulnerability Assessment Framework: *Capacity*

Climate Impact	Risk	Sensitivity	**Capacity**
Human and social systems			✔
Natural systems			✔
Built systems			✔

Capacity = the ability of systems, institutions, humans, and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences.

IPCC, 2014: Climate Change 2014: Impacts, Adaptation, and Vulnerability.

Case Studies - Panel

Case study on **Human and Social Systems**:

- Jonathan Kusel, Sierra Institute

Case study on **Natural Systems**:

- Alyssa Mann, The Nature Conservancy

Case study on **Built Systems**:

- Yoon Kim, 427

Case Study: Human and Social Systems

Climate Impact	**Risk**	**Sensitivity**	**Capacity**
Human and social systems	✔	✔	✔
Natural systems			
Built systems			

Human and Social Systems:

- Jonathan Kusel, Sierra Institute

Case Study: Natural Systems

Climate Impact	**Risk**	**Sensitivity**	**Capacity**
Human and social systems			
Natural systems	✔	✔	✔
Built systems			

Natural Systems:

- Alyssa Mann, The Nature Conservancy

Case Study: Built Systems

Climate Impact	**Risk**	**Sensitivity**	**Capacity**
Human and social systems			
Natural systems			
Built systems	✔	✔	✔

Built Systems:

- Yoon Kim, 427

DISCUSSION AND QUESTIONS